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Zero Retries is an independent newsletter promoting technological innovation that is occurring in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Now in its third year of publication, with 1200+ subscribers.

About Zero Retries

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor Emeritus

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Web version of this issue - https://www.zeroretries.org/p/zero-retries-0134

Request To Send

Commentary by Editor Steve Stroh N8GNJ

Hamvention 2024, Ho!

Hamvention 2024 in Xenia, Ohio, USA countdown - ~~*19*~~ *18 weeks!*

Whither ARRL…

(Briefly, *briefly*…)

It's hard to reconcile the organization that had the commendable vision to recommend (what "Amateur Radio conservatives" might regard as) a radical change to the Amateur Radio VHF / UHF bands (see the lead story below)…

from the organization that seems bent on creating more organizational chaos. While my perspective on the ARRL remains mostly unchanged, it has softened somewhat after seeing the effective, *progressive* representation of the ARRL, and Amateur Radio, with its comments to the FCC in Docket 16-239.

Make no mistake, the ARRL's comments were the result of a professional (lawyer) being paid to do so. But, seeing the ARRL file comments, and *no other Amateur Radio organization* doing so (some of which could afford similar professional legal representation), was sobering. Simply put, the professionals can be counted to show up, with competence, to engage with the FCC… and that requires consistent funding.

A trusted advisor to Zero Retries has regularly made the point to me regarding ARRL that the chaos and dysfunction in ARRL is simply a microcosm of our current national… societal turmoil… and checking out on *that* isn't really an option. Thus, my advisor posits, if you're a US Amateur Radio Operator with any desire for Amateur Radio continuing into the future, *not supporting ARRL isn't an option*. As an ARRL member, our influence is to vote on representatives (Division Directors and Vice-Directors), and provide them with our perspective.

Food for thought in the coming months.

Change of Plans for Video - Not on Substack

While I haven't decided "Wither Substack" (see **Zero Retries 0133** - The Substack Problem), one immediate conclusion is that I won't be going forward with doing video on Substack. Again, no conclusions quite yet, but it's not looking good for continuing on Substack. Yes, YouTube or Vimeo are options, but at this moment I don't need another near-vertical learning curve in attempting to do video on my own.

Zero Retries Guide to Interesting Conferences

I've updated the Zero Retries Guide to Interesting Conferences page with all the Zero Retries Interesting conferences I was able to find information on for 2024. I'll check for updates on other conferences periodically and update it several times through 2024. New to this update is a sentence or two about why a conference is Zero Retries Interesting.

Nice Mention of Zero Retries in Amateur Radio Daily

Zero Retries got a nice mention in **Amateur Radio Daily's** Happy New Year! post:

> Thanks again to N8GNJ and Zero Retries for referencing Amateur Radio Daily a number of times…

You're welcome Cale (Mooth K4HCK)! I'm a fan of K4HCK's two *big* projects - Amateur Radio Daily and Amateur Radio Weekly. The latter is a must-read on Saturday mornings and it's always fun to see something *Zero Retries Interesting* like MeshCom 4.0 (see ZR > BEACON, below) in ARD or ARW that *I* didn't spot. While Amateur Radio Weekly, in particular, *seems* like a quick read, I can attest that it's *serious work to monitor a lot of feeds* and sort through those to bring readers a concise summary of interesting stories about Amateur Radio *each week*.

73,

Steve N8GNJ

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Now, *We Wait* for the FCC to Decide on Bandwidth Limits for VHF / UHF Bands

By Steve Stroh N8GNJ

Summary of the comments filed on FCC Docket 16-239.

The cutoff date for comments to the FCC on Docket 16-239 was end of day (Eastern - Washington, DC) January 8, 2023.

To see the comments that were filed for yourself,

- Go to **https://www.fcc.gov/ecfs/search/search-filings**
- In the Proceeding(s), type **16-239**
- Wait a few seconds for the search engine to find:
- **16-239** | Amateur Baud Rate
- Click on that
- Then scroll down and click the big **Search** bar.

Seventeen individuals and one organization took the time and effort to file comments. I commend:

Michael Adams, Tom Azlin (2), D. William Buhler, Ron Economos, Michael Gray, John Eric Grumling, Michael Hembry, Benjamin Kuhn (2), Steve Lampereur, Dennis Roth, Josh Shupack, Willis Keith Stroud, Jeremy Taylor, and Steven Truffer (2).

Those cited above are the most recent commenters who responded to the FCC's Further Notice of Proposed Rulemaking that requested comments on removing the symbol rates for the VHF / UHF bands and asking for comments on changing the bandwidth limits on the VHF / UHF bands.

***ARRL* ~~FCC~~ Comments - Surprisingly Progressive**

I also commend the ARRL for filing comments. *They showed up*, and (commendably) offered a *bold recommendation to the FCC* (paraphrased):

Delete the bandwidth limits on the VHF and UHF bands.

The deep understanding of the FCC by the ARRL's Washington Counsel, David R. Siddell K3ZJ, is apparent in the ARRL's comments.

> The history of the first phase of this proceeding demonstrates the difficulty of accommodating fast-paced technological change. The reasons for the more regulatory approach in the HF range are mostly absent in the LF, VHF and UHF bands that are subject to the FNPRM, and those differences underly the difference in approach suggested herein by ARRL.

To me, *this* was *the most salient point that matters to the FCC* in considering changes to the Amateur Radio regulations, and kudos to K3ZJ for making it. From the perspective of the FCC, it's preferable (by far) to *not* to get petitioned, regularly, in the coming years by Amateur Radio Operators seeking more flexibility in the Amateur Radio regulations for new modes, such as what motivated the ARRL to submit Docket 16-239.

> Instead of continuing to restrict Amateur operations by limiting the symbol (baud) rate and signal bandwidth limits, ARRL suggests that a better approach is to rely on the good operating practices generally observed on the subject bands and the existing FCC Amateur Part 97 regulations that require each licensee to operate with "good engineering and good amateur practice", to "cooperate in selecting transmitting channels and in making the most effective use of the amateur service frequencies", to never "willfully or maliciously interfere with or cause interference to any radio communications or signal", and to limit bandwidth to the minimum necessary for the information rate and emission type employed.

Again, K3ZJ's deep understanding of the FCC's perspective is on display here, reassuring the FCC that there are other Amateur Radio regulations that can counterbalance the potential of any "bad actors" that emerge to take unreasonable advantage of the requested regulatory change.

Individual Commenters - *We Showed Up*

It should be noted that most of the recent commenters in Docket 16-239 made use of the Express Comment option. In my recommendations to file comments in Zero Retries, I should have mentioned the Express Comment option more prominently, that it's pretty easy and quick to "fill in the form with your brief comments" rather than the more laborious choice to "compose a letter" that I, ARRL, Benjamin Kuhn, and Dennis Roth opted for.

Kudos to **Jeremy Taylor** and **Ron Economos** for filing their comments in *December*. Both made recommendations to increase the maximum bandwidth on various VHF / UHF bands, and Economos referencing STEM students being able to experiment with modes using wider bandwidths.

Tom Azlin W7SUA and **Dennis Paul Roth N3AZB** provided well-informed suggestions on maximum bandwidth for the 2200 and 630 meter bands (but no comment on VHF / UHF bands).

Josh Shupack KI7GRA offered a brief, but poignant comment as a "relatively young operator":

> It's important to keep amateur radio relevant for the incoming generation of digital natives.

KI7GRA's brief comments are a great example that, brief as his comments were, *they're more influential to inform the FCC* about the future of US Amateur Radio VHF / UHF bands, than the tens of thousands of US Amateur Radio operators *who didn't bother to comment*.

Willis Keith Stroud W4WKS' comments were similarly brief, endorsing my comments to remove all symbol rates and bandwidth limits from the VHF / UHF bands.

Steve Lampereur KB9MWR commented that all bandwidth limits should be removed from the VHF / UHF bands, observing that there have been no adverse affects from there being no bandwidth limits for the 902-928 MHz (33 cm) band.

Michael Hembrey comments were to change from baud rate to bandwidth limits, and have those changes apply across all amateur bands and frequencies.

John Eric Grumling recommended removing all symbol rates and bandwidth limits in reference to using new (within Amateur Radio) techniques like Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA).

Similar to Grumling, **Michael Gray** recommended removing all symbol rates and bandwidth limits and made reference to new (within Amateur Radio) techniques such as Orthogonal Frequency Division Multiple Access (OFDMA) and and "burst mode relay". Gray was also the only commenter to address the FCC's request for "… provide support for the modification, including any associated costs and benefits":

> Extraneous regulations with no benefit only *INCREASE* the cost of administration and enforcement. Given the lack of benefit bandwidth limitations convey, they result in a needless cost to the FCC and people of the United States.

I was humbled that **Benjamin E. Kuhn KU0HN** used my comments as a template, but used his own background and experience to support his suggestions. I particularly enjoyed:

> It could be argued that SDR technology could be used within imposed bandwidth limitations, this will eventually prove to be a short-sighted position. To paraphrase an old system engineering maxim from the early days of the Unix operating system, "By preventing someone from doing something stupid, you may also be preventing someone from doing something clever."

In his comments, **Steven Truffer** made the point that if higher speed modes are feasible, the time a channel is in use is reduced.

Reply Comments Period

Again, I am no expert on FCC processes, procedures, or precedents. After the FCC's stated period for comments closes, there is another period for *Reply* Comments. Apparently that period is 15 days after the Comments close:

> **Public Comment Periods**
>
> When a Petition for Rulemaking, an NOI, an NPRM or an FNPRM is announced in a Public Notice"("Notice"), the Notice generally will contain a deadline for filing of public comments and instructions on how to file comments. This deadline generally will be 30 days after publication of the Notice, and *reply comments typically are due 15 days after that*.

The first *Reply Comment* was filed by **Michael D. Adams** regarding the ARRL's comment:

> While I agree with ARRL's recommendation to remove symbol rate limits on the bands subject to the FNPRM, I am concerned with the prospect of completely removing bandwidth limits.

It's puzzling that Adams simultaneously agrees with the ARRL's recommendation… *and* is concerned about that recommendation. In my opinion, the ARRL comments provide ample justification and reasoning that other portions of the Amateur Radio regulations provide ample incentive to apply "good Amateur practice" for selection of appropriate bandwidths.

The second reply comment was by Ron Economos with a fine-grained reading of the Amateur Radio regulations:

> I fully agree with the ARRL's position that all symbol rate and bandwidth restrictions should be deleted on the 2200, 630, 6, 2, 1.25 meter and 70 cm bands. In addition, the following items are required to completely delete all restrictions. 1) Footnote 97.307(f)(2) should be deleted from the 6, 2, and 1.25 meter bands in the 97.305 table. 2) The 6 meter band should include footnote 97.307(f)(8) in the 50.1 to 51 MHz segment. In other words, the 6 meter band should be unified to 50.1 to 54 MHz in the 97.305 table.

And… checking a few hours before publication time, some other Reply Comments have been submitted.

Dennis Zabawa and Janis Carson AB2RA (1) (2)… are not happy… with the ARRL's comments of no bandwidth limits because… chaos will inevitably ensue? I don't quite get the substance of Zabawa and AB2RA's disagreements with previous comments.

~~By my math, 15 days past comment cutoff of January 8 is January 23rd, but call it January 22nd to be safe.~~

Update / Correction: The cutoff date for Reply Comments is ***January 22, 2024*** so "to be safe", I suggest submitting Reply Comments in by January 21st.

In addition to my fellow commenters providing food for thought, a few other ideas came to mind for potential reply comments (you can reply to your own comment), such as:

- Amateur Radio has many Software Defined Radios available for use, but most are designed for the HF bands and operate through 54 MHz (includes the 50-54 MHz 6 meter band). Thus it makes sense to allow experimentation with wider bandwidths within 6 meters to take advantage of those many HF Software Defined Radios.
- I think that Steven Truffer's comment that higher speed transmissions can equate to reduced channel time deserves further discussion as a method of potentially increasing the shared use of Amateur Radio spectrum. Humans need seconds to transmit information. With a high speed data communications system made possible with wider bandwidths, computers can transmit information in milliseconds.
- It might be "airing dirty laundry" with the FCC, but the fact that the 2 meter band (144-148 MHz) and much of 440-450 MHz has many coordinated repeaters does not equate that those bands and sub-bands are "full". In reality, very few repeaters have substantial activity these days - these bands are now mostly quiet. A simple spectrum analyzer plot over 24 hours "tells the tale". But perhaps that's something we shouldn't mention to the FCC… at least directly. *Unless push comes to shove* with "the band is full - don't change anything" specious arguments.

Organizations That Didn't Show Up

Lastly, it's disappointing that US-based Amateur Radio organizations that could reasonably be expected to provide comments to the FCC *did not do so*, including:

- Amateur Radio Digital Communications (ARDC)1
- AMSAT - Radio Amateur Satellite Corporation (AMSAT)2
- APRS Foundation3
- AREDN - Amateur Radio Emergency Data Network4
- CQ Amateur Radio Magazine5
- Open Research Institute (ORI)6
- Quarter Century Wireless Association (QCWA)7
- TAPR8

See the footnotes for why it seemed to me that each organization had standing to comment in Docket 16-239. If you're a member of one of these organizations, consider asking the leadership why they didn't consider it important enough to provide comments in the Docket 16-239 Further Notice of Proposed Rulemaking.

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Enhancing Amateur Radio with What3Words

By Andrew McCaskey WA4MTP

Editor's Note: My thanks to WA4MTP for offering this interesting perspective on an alternative coordinate system than the Latitude / Longitude, and grid squares.

Imagine prioritizing the exchange of meaningful, verifiable information in amateur radio contests and POTA operations, rather than just callsigns and proforma 599 signal reports. What if this information could have real-world applications, be familiar to emergency responders, and easily explained to the public?

Enter What3Words (W3W), a geocoding system assigning three unique words to every 3x3-meter square globally using GPS, available by smartphone app or internet browser.

Company founder Chris Sheldrick discussed its concept in a 2017 Ted Talk and W3W is already used by emergency responders and integrated into some luxury cars.

While my familiar 6km x 9km amateur radio Maidenhead grid [EN71aq] is great for propagation verification, W3W excels in generating precise location communication. Enter **///dome.stump.pack** in the app, and you have my future antenna site located within a few feet.

What3Words is a natural fit for POTA- specific location of the POTA station and direct navigation to locations of interest such as parking, services or camps by non-hams using the smartphone app.

What3Words is a natural fit for Emergency Preparedness Drills- The app stores the W3W database locally on the device, allowing you to find your current what3words address offline. You can navigate to a what3words address of an incident or resource using a compass mode without a data connection.

What3Words is ripe for experimentation- W3W offers a public API and Voice API in multiple languages.

What3Words can make contests like Field Day more relevant - and deliver an easily digested story for publicity to the general public.

How about a change up for contesting in 2024? A suitable multiplier for a successful W3W QSO two way exchange of W3W info might do the trick.

- What3Words (W3W): https://what3words.com
- Emergency responders using W3W: https://t.ly/hLeGO
- Luxury cars with W3W integration: https://t.ly/s9mqC
- Chris Sheldrick's Ted Talk: https://t.ly/dtuGS
- W3W public API: https://t.ly/1VOHk

Editor's Postscript: There is some controversy about What3words being a proprietary system with public benefit and a public Application Programming Interface (API). Apparently there's sufficient benefit and usability with W3W that some public safety agencies are using it. In my opinion, W3W being proprietary is not substantively different than, for example, Google Maps, which is also proprietary with public benefit and public API, which is widely used in Amateur Radio.

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ZR > BEACON

By Steve Stroh N8GNJ

Short mentions of Zero Retries Interesting items.

ARRL Guide to Filing Comments with FCC

At the very end of its story ARRL Responds to FCC Proposals, there is this mention:

> An ARRL guide to filing comments is available at https://www.arrl.org/arrl-guide-to-filing-comments-with-fcc.

The story is good "meta" information about the ARRL's perspective on its comments written for the Amateur Radio audience rather than the more scripted, targeted language of an FCC filing.

The guide is good info - *bookmarked!* (But, of course, I wish they had publicized its existence prior to Docket 16-239 comments closing - if it did exist then.)

Easy AllStarLink

Tom Salzer KJ7T on his The Random Wire newsletter:

> For me, the points in favor of AllStarLink are:
>
> - It is built on open source software. That is something that is important to me.
> - It uses high-quality codecs for voice, the same codecs used in many business-oriented voice-over-ip phone systems. Being able to clearly hear what is being said is becoming more important to me as my hearing changes with age. The audio quality is usually superb.
> - You can buy a solution or build a solution. This appeals to my interest in becoming a better builder.
> - The technology can be used to control repeaters or operated as an individual node in the AllStarLink network. I like flexibility in the tools I use.
> - When part of a repeater system, people can connect over radio or over an internet connection. I find this more inclusive than the idea that if you aren't using a radio (or you aren't a CW operator, or you aren't using a vacuum tube radio, or or or), you aren't really a ham.
> - You can make simplex contacts or participate in nets, nearby or across the planet. While AllStar works fine for conversations with hams close by, it shines in situations where geographic distance would otherwise hamper conversations.
> - If you are near a repeater with AllStarLink, you can operate over RF. If no such repeater is near you, you can operate over an internet connection.

- Being limited to licensed amateur radio operators, folks on AllStar tend to be intelligent and well mannered, making for pleasant, productive interactions.
- All of AllStarLink is open to operators holding a Technician license. If you are a licensed ham, you have access to the entirety of AllStarLink.

KJ7T offers a good guide to AllStarLink with points I had not heard before, and makes a reasonable case for building (or buying) an AllStarLink node that works with good old plain FM portable radios.

MeshCom 4.0

Institute of Citizen Science for Space & Wireless Communication (ICSSW):

> MeshCom is a project to exchange text messages via LORA radio modules. The primary goal is to realize networked off-grid messaging with low power and low cost hardware.
>
> The technical approach is based on the use of LORA radio modules which transmit messages, positions, measured values, telecontrol and much more with low transmission power over long distances. MeshCom modules can be combined to form a mesh network, but can also be connected to a message network via MeshCom gateways, which are ideally connected via HAMNET. This enables MeshCom radio networks, which are not connected to each other via radio, to communicate with each other.

My thanks to Pseudostaffer Jeff Davis KE9V and Amateur Radio Weekly for mentioning MeshCom. I wasn't able to find a description of what's different / new in 4.0. I was also not previously aware of ICSSW - interesting organization!

FreeDV 2020 Mode Using Raspberry Pi 5

Mooneer Salem K6AQ on the digitalvoice mailing list:

> I finally managed to get the Raspberry Pi 5 that I preordered a few months ago. Unlike with the 4, it appears that we're finally able to handle 2020 mode. The audio also sounded as expected, albeit at pretty low volume.

Background on FreeDV 2020 Mode:

> … The new FreeDV 2020 mode uses LPCNet Neural Net speech synthesis technology developed by Jean-Marc Valin. The goal of this mode is 8kHz audio bandwidth in just 1600 Hz of RF bandwidth. FreeDV 2020 is designed for HF channels where SSB an "armchair copy" – SNRs of better than 10dB and slow fading. FreeDV 2020 uses the fine OFDM modem ported to C by Steve (K5OKC) for the FreeDV 700D mode.

From the context, I gather that FreeDV 2020 Mode previously required a "desktop class" computer, but now FreeDV 2020 Mode can be done with a comparatively inexpensive Raspberry Pi 5.

DB9 Breakout Board / Pass-through Adapter

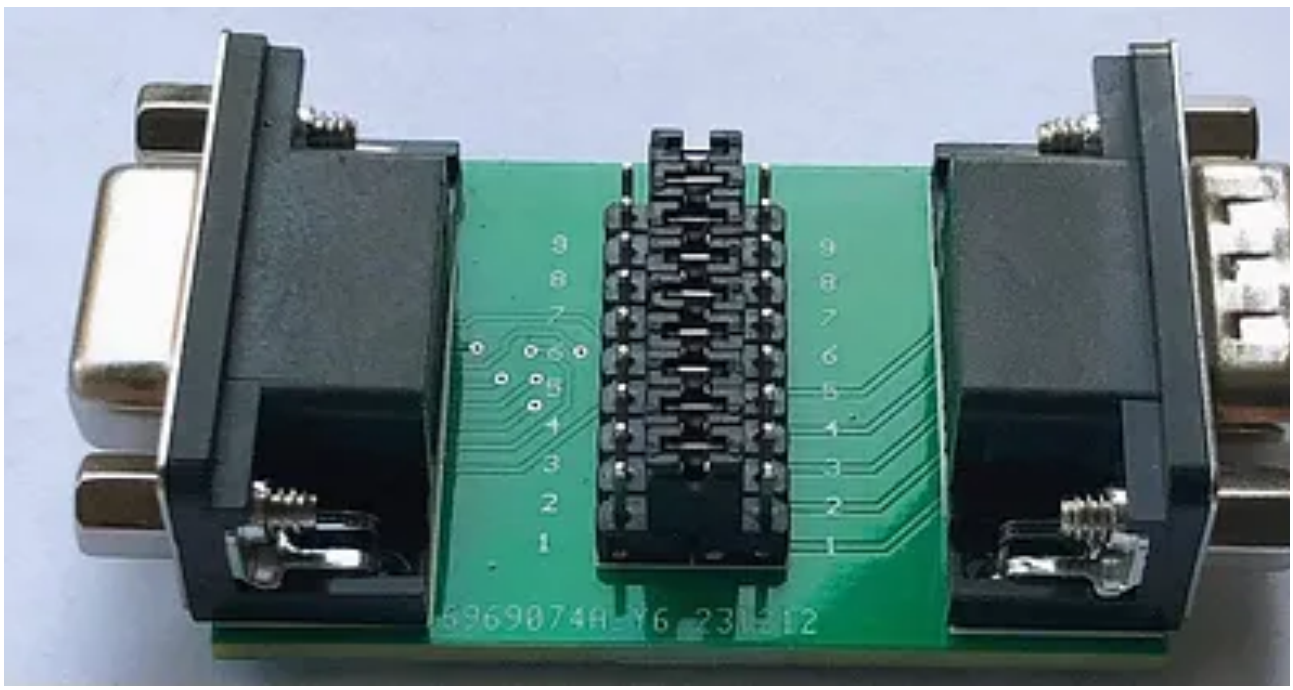

Image courtesy of RiverMicro on Tindie

Description

D-subminiature DB9 connectors are often used for serial communications: RS232, RS485, CAN, etc.

Specifications

- male and female connectors
- break-out board with all signals accessible via header pins
- custom wiring using supplied jumpers and/or external flying wires

Applications

- pass-through, crossover, custom wiring
- custom wiring for any or all 9 signals
- serial port sniffing

It's often the simple things that make (technological) projects easier. Yes there were similar adapters to this back in the day, but this design strikes me as elegant with jumpers instead of requiring jumper *wires* for *all* connections.

I dropped a note to "RiverMicro" the creator of this device suggesting that a version of this unit with RJ45 connectors would be highly useful (thinking of using the now ubiquitous RJ45 connectors for microphones on most mobile Amateur Radios) and they replied that they have such a unit but it is currently out of stock (briefly).

Build a Ham Transmitter with a Raspberry Pi Pico

This interesting project for a low power Morse Code (CW) transmitter for HF emerged on the (new) YouTube channel 101 Things. It went "viral" (as much as projects *can* go viral within the small community of Amateur Radio…) from mentions on other sites.

RTL-SDR.com gets the prize for the best, catchiest title - An HF Ham Radio SSB/AM/FM/CW Transmitter made from a Raspberry Pi Pico and *not much more*.

> The design generates an oscillator signal using the Pico's Programmable IO. For AM/SSB it uses the PWM output pins to generate an RF envelope which gets mixed together with the oscillator using an analog multiplexor. A small microphone is also connected to the Pico for voice transmissions. The designer notes that the output power is far too low to be used on the air, but adding an output amplifier would help.
>
> The software is all open source and provided on GitHub, and more information about the design can be found on the designer's '101things' website.

Hackaday.com - Pico-Sized Ham Radio offered a good background and overview:

> There are plenty of hobbies around with huge price tags, and ham radio can certainly be one of them. Experienced hams might have radios that cost thousands of dollars, with huge, steerable antennas on masts that can be similarly priced. But there's also a side to the hobby that throws all of this out of the window in favor of the simplest, lowest-cost radios and antennas that still can get the job done. Software-defined radio (SDR) turned this practice up to 11 as well, and this radio module uses almost nothing more than a microcontroller to get on the air.
>
> The design uses the capabilities of the Raspberry Pi Pico to handle almost all of the radio's capabilities. The RF oscillator is driven by one of the Pico's programmable I/O (PIO) pins, which takes some load off of the processor. For AM and SSB, where amplitude needs to be controlled as well, a PWM signal is generated on another PIO which is then mixed with the RF oscillator using an analog multiplexer. The design also includes a microphone with a preamplifier which can be fed into a third PIO; alternatively it can receive audio from a computer via the USB interface. More processor resources are needed when generating phase-modulated signals like RF, but the Pico is still quite

> capable of doing all of these tasks without jitter larger than a clock cycle.

As I now say as often as I can to make the point: ***Radios are computers - with an antenna.***

OpenWrt One/AP-24.XY is an Upcoming Router Board Developed by OpenWrt and Banana Pi

Jean-Luc Aufranc (CNXSoft) on CNX Software – Embedded Systems News:

> OpenWrt developers have started the process to develop the "OpenWrt One/AP-24.XY" router board based on MediaTek MT7981B (Filogic 820) SoC and MediaTek MT7976C dual-band WiFi 6 chipset, and designed in collaboration with Banana Pi that will also handle manufacturing and distribution of the router board.
>
> As of the OpenWrt 23.05 release, close to 1,800 routers and other devices are officially supported by the lightweight embedded Linux operating system, and many more claim to be running OpenWrt through a fork of the OS. But none of those are made by OpenWrt developers who have now decided to create their own router board in collaboration with Banana Pi since they've done such boards including the BPI-R4 WiFi 7 router SBC.

Alan Kay:

> People who are really serious about software should make their own hardware.

This quote has sometimes been attributed to the late Steve Jobs to explain Apple's vertical integration, including designing its own chips, but the original source is Alan Kay.

This article doesn't explain fully that "router" is actually a Wi-Fi Access Point, so they're building a *radio* unit.

This development is Zero Retries Interesting, because:

- Amateur Radio Emergency Digital Network (AREDN) firmware for Wi-Fi and Wireless Internet Service Provider (WISP) units is built on OpenWRT.
- This design will be open source, so perhaps the design can be forked for Amateur Radio use. I've long advocated that Amateur Radio Operators are allowed to use higher power than Wi-Fi units in Amateur Radio exclusive section of 2.4 GHz, and there should be hardware developed that takes advantage of that capability. That's been a tough sell for hardware vendors to do such a design "from scratch" for a limited customer base that is AREDN users.
- Since there will be minimal use of proprietary "blobs", more fine-grained control of the radios should be possible, perhaps making this unit more even useful for Amateur Radio.
- This is a radio designed for software development so, for a change, it's not optimized being inexpensive to manufacture and profitability. Thus there will finally be ample compute power, storage, and RAM, potentially enabling more interesting capabilities for Amateur Radio.

Elevate Your Radio Control with Quansheng Dock: A Comprehensive Guide

Gary Utz KE2YK on Ham Radio Reviews and Events:

> **Key Takeaways:**
>
> 1. Remote Control: Access and control Quansheng radios remotely using custom firmware through Quang Shang Dock.
> 2. Enhanced Functionality: Utilize features like the Channel Editor and Analyzer for a more in-depth radio control experience.
> 3. Firmware Installation: Follow simple steps to install the necessary firmware for the software's seamless operation.

Remarkable that an inexpensive portable radio can be remote controlled via a web app.

Other Unusual Remote Control Options

This week I also saw mention of the use of the VGC / VERO N7500 "black box" radio (see **Zero Retries 0091** - Black Box Radio Using an App as a Front Panel) as another remotely controlled radio.

Unfortunately I didn't bookmark the article or mailing list mention, but the gist was that the Android app for the N7500 doesn't just work with Bluetooth to connect to the radio, it can connect via TCP/IP (Internet) between the Android app and the radio and thus allow remote operation beyond just using Bluetooth direct between the Android device and the radio. I don't remember what it took to put the radio on the Internet, but the manufacturer offers a number of proxy servers to let the radio and the Android app "meet in the middle". I thought that was a neat hack!

In researching this a bit, I also found RRC-Nano App - an Android app for use with Remoterig units.

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Feedback Loop

My Thanks to commenters for Zero Retries 0133- Loïc F. - F4JXQ, Kay Savetz K6KJN, and ReadyKilowatt for providing additional information for subjects discussed in that issue.

If you provide feedback via email, I may excerpt your feedback or include it in full. Unless you specifically grant me permission to include your name, I won't do so. Feedback may be lightly edited for clarity.

Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) — In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with radio technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to everyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*
- ***Founding Members* who generously support Zero Retries financially:**
  Founding Member 0000 - Steven Davidson K3FZT
  Founding Member 0001 - Prefers to Remain Anonymous 01

  Founding Member 0002 - Chris Osburn KD7DVD
  Founding Member 0003 - Don Rotolo N2IRZ
  Founding Member 0004 - William Arcand W1WRA
  Founding Member 0005 - Ben Kuhn KU0HN
  Founding Member 0006 - Todd Willey KQ4FID
  Founding Member 0007 - Merik Karman VK2MKZ
  Founding Member 0008 - Prefers to Remain Anonymous 14

  Founding Member 0009 - Prefers to Remain Anonymous 19
- Numerous Annual and Monthly subscribers who also generously support Zero Retries financially!

Want to Support Zero Retries?

- The *most* effective way to support Zero Retries is to simply mention Zero Retries to your co-conspirators that are also interested in knowing more about technological innovation that is occurring in Amateur Radio and encourage them to become a fellow subscriber.
- One particularly effective method of promoting Zero Retries is to add a mention of Zero Retries to your QRZ page (or other web presence) and include a link:

  https://www.zeroretries.org
- If you'd like to financially support Zero Retries, becoming a paid subscriber is *greatly* appreciated and helps offset expenses incurred in publishing Zero Retries. Paid subscriptions for Zero Retries are *entirely optional*, as explained in this special issue of ZR:
  Zero Retries Administrivia - Activating Payment Options.

These blogs and newsletters regularly feature Zero Retries Interesting content:

- Dan Romanchik KB6NU mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Jeff Davis KE9V also mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Amateur Radio Weekly by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories.
- Experimental Radio News by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC. It's a *must-read-now* for me!
- RTL-SDR Blog - *Excellent* coverage of Software Defined Radio units.
- TAPR Packet Status Register has been published continuously since 1982.
- Other Substack Amateur Radio newsletters recommended by Zero Retries.

These YouTube channels regularly feature Zero Retries Interesting content:

- HB9BLA Wireless by Andreas Spiess HB9BLA

- KM6LYW Radio by Craig Lamparter KM6LYW (home of the DigiPi project)
- Modern Ham by Billy Penley KN4MKB
- Tech Minds by Matthew Miller M0DQW

Zero Retries is currently using the Substack email publishing platform to publish Zero Retries. It's particularly suitable for small newsletters as you can get started for no cost.

If you're reading this issue on the web and you'd like to see Zero Retries in your email Inbox every Friday afternoon, just click below to join ***1200+*** other subscribers:

Subscribe now

Please tell your co-conspirators about Zero Retries — just click:

Share Zero Retries

Offering **feedback or comments** for Zero Retries is equally easy — just click:

Leave a comment

If you're a fellow smart person that uses **RSS**, there *is* an **RSS feed for Zero Retries**.

Zero Retries (N8GNJ) is on Mastodon — n8gnj@mastodon.radio — just click:

Zero Retries / N8GNJ on Mastodon

Email issues of Zero Retries are "instrumented" by Substack to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- SuperPacket blog — *Discussing new generations of Amateur Radio Data Communications — beyond Packet Radio (a precursor to Zero Retries)*
- N8GNJ blog — *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs — Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham (The City of Subdued Excitement), Washington, USA, and linked to the Internet via **Starlink *Satellite* Internet Access**.

2024-01-12

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Blanket permission granted for TAPR to use any Steve Stroh content for the TAPR Packet Status Register (PSR) newsletter (I *owe* them from *way* back).

1

Mission: The mission of Amateur Radio Digital Communications (ARDC) is to support, promote, and enhance digital communication and broader communication science and technology, to promote Amateur Radio, scientific research, experimentation, education, development, open access, and innovation in information and communication technology.

2

Though we are fond of traditions our designs and technology *continue to push the outside of the envelope*. For over 50 years AMSAT groups in North America and elsewhere have played a key role in *significantly advancing the state of the art* in space science, space education, and space *technology*.

3

… dedicated to the preservation and *advancement* of the Automatic Packet Reporting System* (APRS) *digital communications protocol*.

4

About: Group Mission: To provide the Amateur Radio Community with a quality solution for supporting the needs of *high speed data in the Amateur Radio and Emergency Communications field*.

5

About: For more than 70 years, CQ has been on *ham radio's leading edge* -- the first to promote mobile operating (in the 1950s), semiconductors (in the 1960s) and *packet radio* -- the original e-mail (in the 1980s). The amateur satellite program got its start with an idea in the pages of CQ!

6

Example project: Haifuraiya – High Flyer – Digital microwave broadband communications system for space. 6U, GEO and interplanetary. Relies on an open source version of DVB-S2/X and polyphase filter banks. FDMA uplink at 5GHz and TDM downlink at 10GHz. FPGA board, TT&C, and RF board design are all in progress.

7

Mission: To operate exclusively for charitable, educational and *scientific purposes*, and more specifically to promote interest in Amateur Radio Communications and the *advancement of the electronic art*…

8

TAPR popularized the use of Packet Radio by Amateur Radio in the US by creating the TAPR TNC-1 and TNC-2! About: TAPR is a non-profit 501(c)(3) organization of amateur radio ("ham") operators who are interested in *advancing the state of the radio art*. … while we still support *packet radio* our areas of interest have expanded to include *software defined radio*, *advanced digital modulation methods*…